DETAILED ACTION

Status of Claims

1. This action is in reply to the Application filed on 30 December 2003.
2. Claims 1–33 are currently pending and have been examined.

Information Disclosure Statement

3. The Information Disclosure Statement filed on 7 July 2004 has been considered. An initialed copy of the Form 1449 is enclosed herewith.

Claim Objections

4. Claim 24 is objected to because of the following informalities: The claim limitation *processing task dependency data relates …* is probably a typographical error and should read *processing task dependency data related…* Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

   The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant uses the phrases *self-throttles* and *predetermined threshold* in a manner that is incomplete and hence vague and indefinite. Moreover, this merely describes and characterizes an effect of unstated method steps. No methods describe how the system is made to speed-up or slow down *the system* nor are appropriate measures that are modulated described. In addition, the term *threshold* is also vague: what does it mean to keep system resources under…? For purpose of examination, Examiner interprets this to mean the degree of processor utilization.

As for the term *self-throttles,* Examiner interprets this to mean that some degree of data alignment is maintained during processing.

7. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant refers to the task *subscription cycle end processing,* but the method steps this 'processing' entails is not disclosed in the claim nor in the specification. Consequently, it is vague and indefinite. For purposes of examination, Examiner interprets this to mean processing for the end of an invoice cycle or for a final bill.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1–33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanagan, *et al.* (US PgPub 20040133487 A1) in view of Pather, *et al.* (US 7177859 B2).

Claims 1, 6, 7, 15, 22, 28 and 31:

Hanagan describes and/or discloses *a system* (see title) and *method* (see *e.g.,* [0004] “billing”, “aggregates”, and in [0082] “determine the tasks…”) and *computer-readable media* with *computer-executable instructions* (claim 3 and [0452] “server programs”) *that facilitates task processing* ([0082]) and *periodic processing* ([0306] “on a periodic basis”) *of subscription accounts* ([0102] “customer subscription information”) in the following limitations, as shown:

- *a bulk component* ([0357] “batch environment”) *that concurrently processes* ([0357] “automatically processed in parallel”) *a plurality of eligible accounts* ([0411] “row is valid” and in [0078] “providing

advanced features to additionally support scripting and validations." (emphasis added)) *with a set of dependent tasks* ([0329] "Task dependencies")*; and*

- *a removal component* (Abstract: "The components are modular." and in [0252] "Filters can be set up to filter out records. […] Filters are defined using the ERP graphical user interface." (emphasis added) where 'filter out' corresponds to *removal* and 'ERP…' corresponds to *component*") *that removes an account from the eligible accounts as an errored account if an error is associated therewith* ([0250] "Single erroneous UE records are errored out and written to an Invalid Event Records File. If some records are rejected due to invalid field contents, the reason is written to an Error File." (emphasis added) where 'records' corresponds to *eligible accounts* and 'errored out' corresponds to an *errored account*.).
- *an error component* ([0149-56] "…in the case an error is detected." See also [0250] "The Validator") *that that processes the errored account* ([0250] "Single erroneous UE records are errored out and written to an Invalid Event Records File.") *to resolve the error associated therewith* (see [0250] and [0443] "Error Handling")*, and merges the resolved errored account with bulk processing* ([0250] "A GUI is also provided for error correction. […] The validated UE records are written to files (different files (same format) for assembly and non-assembly records)." (emphasis added) where 'validated' corresponds to *resolved errored account* and 'assembly' corresponds to *merges…* see also [0477] "The framework merges master and incremental update files…") *of the eligible accounts by the bulk component when the resolved errored account is temporally aligned with the bulk processing* ([0476] "Over time the master file will get out of synchronization with the database because of database inserts, updates or deletions that are applied to the database table. For large tables supporting time critical functionality, these additional changes are captured periodically and made available to running processes in an incremental update file." (emphasis added) where 'out of synchronization' in conjunction with 'changes…' and 'incremental update…' corresponds to *temporally aligned* and 'running processes' corresponds to *the bulk component* and *bulk processing*)*; and*

- *facilitates real-time processing of an account* ([0084] "The invention is a Customer Care and Billing (CCB) solution, providing convergent and modular functionality, real-time information, drastically shortened time to market, and a flexible architecture.").

Hanagan does not specifically teach the notion of *a catch-up component, per se,* but Pather in an analogous art pertaining to programming models for subscription services, does. In at least col. 28, lines 59-62 ([28,59-62]) "Additionally, developers may specify the number of quan-tums that the logical generator clock can fall behind the real time clock before processing of subscription rules (both event and scheduled) is skipped in order to catch up.")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the modular system models, components and methods of Hanagan that batch process subscription and billing accounts with the methods of Pather that provide a mechanism for 'catching up' because account processing data handled in batches is highly scalable and thus merging corrected data, as by the *error component,* is important so that all accounts can be handled, but the error correction processing may cause many accounts to "fall behind" (Pather [28,51]) the appropriate processing time frame, hence, the capability to *catch up* avoids this problem by maintaining the timeliness of the data processing.

Claims 2 and 16:

Hanagan teaches the following limitation:

- *the tasks are processed sequentially* (see [0157] and [0259] "The sequence of calculations…") *against the plurality of eligible accounts* ([0180] "Maintain Customer Accounts") *according to task dependencies* ([0329]).

Claims 3 and 17:

Hanagan teaches the following limitation:

- *the bulk component repeatedly processes the errored account a predetermined number of attempts before the errored account is removed by the removal component for error processing* ([0247] "A raw event record file is rejected if it contains too many erroneous records (where "too many" is specified in a user-defined parameter)…" and in [0283] "the cycle can be approved for

distribution or rejected to be reprocessed." (emphasis added) and finally, in [0250] see "error correction" and [0476] for "deletions" and *removal component*)).

Claims 4 and 23:

Hanagan teaches the following limitation:

- *merging the errored account* ([0250] "Single erroneous UE records are errored out and written to an Invalid Event Records File.") *that has been resolved with the one or more eligible accounts for further processing in bulk* ([0250] "A GUI is also provided for error correction. […] The validated UE records are written to files (different files (same format) for assembly and non-assembly records)." (emphasis added) where 'validated' corresponds to *errored account that has been resolved* and 'assembly' corresponds to *merging…* see also [0477] "The framework merges master and incremental update files…").

Claim 5:

Hanagan teaches the following limitation:

- *the errored account is merged back in only when the errored account has been resolved* (see the rejections of claims 4 and 23 above. Note the phrase therein *that has been resolved…* is logically equivalent to the condition/limitation *only when the…*) *temporally with processing of the bulk component* ([0476] "Over time the master file will get out of synchronization with the database because of database inserts, updates or deletions that are applied to the database table. For large tables supporting time critical functionality, these additional changes are captured periodically and made available to running processes in an incremental update file." (emphasis added) where 'out of synchronization' in conjunction with 'changes…' and 'incremental update…' corresponds to *resolved temporally* and 'running processes' corresponds to *the bulk component*).

Claim 8:

Hanagan teaches the following limitation:

- *the dependent tasks processed on a first day must be processed error-free before the same tasks can be processed on a succeeding day* ([0082]: "The result is a workflow, identifying the proper order in which tasks must be completed, the estimated time required to perform a task, and the

type of resource(s) required for each task. OP 22 actively monitors each task, generating alarms for potential error conditions, such as tasks failing to start or finish at their scheduled time. OP 22 completely automates order scheduling and processing. This eliminates time-consuming errors due to missed steps and improper work implementations, freeing valuable resources to perform other value." (emphasis added)).

Claim 9:

Hanagan does not specifically teach the following limitation, but Pather, in an analogous art pertaining to programming models for subscription services, does as shown.

- *comprising a catch-up component for real-time processing of an account* (In at least col. 28, lines 59-62 ([28,59-62]) "Additionally, developers may specify the number of quan-tums that the logical generator clock can fall behind the real time clock before processing of subscription rules (both event and scheduled) is skipped in order to catch up.")

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the modular system models, components and methods of Hanagan that batch process subscription and billing accounts with the methods of Pather that provide a mechanism for 'catching up' because account processing data handled in batches is highly scalable and thus merging corrected data, as by the *error component,* is important so that all accounts can be handled, but the error correction processing may cause many accounts to "fall behind" (Pather [28,51]) the appropriate processing time frame, hence, the capability to *catch up* avoids this problem by maintaining the timeliness of the data processing.

Claims 10 and 19:

Hanagan teaches the following limitation:

- *the bulk component* ([0357] "batch environment") *is associated with periodic processing* ([0306] "on a periodic basis") *of the plurality of eligible* ([0411] "row is valid" and in [0078] "providing advanced features to additionally support scripting and validations." (emphasis added)) *(subscriber) accounts* ([0102] "customer subscription information").

Claim 11:

Hanagan teaches the following limitation:

- *the plurality of eligible accounts are processed in parallel by one or more computing devices* ([0268] "ERP [ ] is designed for parallel processing and the workload is balanced between the different processes by workload servers.").

Claim 12:

Hanagan teaches the following limitation:

- *the plurality of eligible accounts are processed in parallel by different threads of execution on a single computing device* ([0396] "On-line application servers are multi-threaded.").

Claim 13:

Hanagan teaches the following limitation:

- *the plurality of eligible accounts are processed in accordance with an access control list* ([0456] regarding data security and "login screens". Also, in [0432] "restrict unauthorized access").

Hanagan does not specifically refer to an *access control list per se,* but Examiner takes Official Notice that it is old and well-known as well as common place in the information processing arts to restrict access to computer services and information using various standard mechanisms, among these is the use of access control lists of authorized users. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an access control list and process accounts *in accordance* therewith because preserving data security and integrity is a necessary condition for ensuring the utility and the functionality of any large-scale information processing system and the utility of such restrictions were predictable at the time of the invention.

Claim 14:

Hanagan does not specifically teach the following limitation, but Pather, as shown, does:

- *the system self-throttles to keep system resources* ([23, 23]: "Such a factor can be considered a trade-off between improving application speed and monopolizing system resources." and corresponds to the effect of self-throttling. In addition, Pather repeatedly refers to "a predetermined threshold" (see *e.g.,* [77,23]) *under a predetermined threshold* ([24,1]: "A value

specified for distributor settings should also be considered in terms of a trade-off between improving appli-cation speed and monopolizing system resources." (emphasis added) where 'a value specified' corresponds to *a predetermined threshold.*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the aforementioned threshold and to self-throttle because it provides a mechanism whereby system administrators can effect a tradeoff between speed and system resources as noted above and that the benefits of this capability were known at the time of the invention and were predictable.

Claim 18:

Hanagan teaches the following limitation:

- *the tasks include at least*
  - *subscription cycle end processing* ([0307] "On Demand bills […] provide the customer with … a final bill directly after disconnection."),
  - *account cycle end processing* ([0018] "combine charges from multiple customers…" and in [0081] "recurring charges…", etc. which read on this limitation in light of the specification at page 10, lines 27-9.),
  - *e-mail messaging* ([0080] "near real-time message processing…" and in [0045] "(Mailing, Electronic Delivery, etc.)"), *and*

Hanagan does not specifically teach *subscription renewal processing,* but Hanagan, in at least [0078] refers to "Customer Care Manager" functions and in [0104] to "Billing and Order Management". Finally, in [0179] "Maintain Subscriptions". These teachings demonstrate a functional equivalence to this limitation. Moreover, Examiner takes Official Notice that such functions as *renewal processing* are old and well-known as well as common place in the customer relationship management arts as these subscription renewal functions facilitate and enhance customer satisfaction and retention (see *e.g.,* Hanagan [0046] "[I]t is no longer satisfactory to ignore the customer."). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize methods

to facilitate *subscription renewal processing* as such is an important element of customer relationship management functions.

Claim 20:

Hanagan teaches the following limitation:

- *the bulk component fetches only the required number of accounts for processing based on the set of tasks to be processed* ([0415]: "The parts of the invention that operate without direct user interaction are called "batch" and "stream I/O". Batch units of workload are initiated periodically, usually according to a pre-defined time schedule or by predictable arrival of an occasional event or file of events from an external system." (emphasis added) and in [0416]: "Each batch process inherits from the HvfApplication infrastructure class, which provides a context for handling event-based processing. […] This is accomplished by coding a method Process Message that provides application-specific handling of asynchronous input queue messages." (emphasis added) where the emphasized text indicates an association between various batch (*bulk*) processes and a particular *set of tasks*.)

Claim 21:

Hanagan teaches the following limitation:

- *the bulk component and the error component process accounts concurrently* ([0443]: "Error Handling: Error handling allows applications to deal consistently with error or fault situations. Error handling for batch applications is different in some respects than for on-line applications since high-volume errors must not stop processing as long as work can continue. On-line errors generally must be dealt with immediately." (emphasis added)).

Claim 24:

Hanagan teaches the following limitation:

- *the processing in bulk further comprises,*
  - *processing task dependency data relates to the set of tasks* ([0329]: "Task dependencies, service request dependencies, and resource availability are all taken into account during the scheduling process.");

- *maintaining system state data of the system* (see [0316] regarding "State Transition Knowledge Base");
- *generating an account level exception list of exceptions generated during the processing in bulk* (In at least [0162] reference is made to "processing" and "exception logic". Further, in [0247] "…the Error Report File…" which is equivalent to *an account level exception list*. Also, in [0443] "Error handling for batch applications…" where this also pertains to *account[s]* as shown in [0081] "The Customer Bill Manager…the mass batch of documents.");
- *monitoring and reporting system processes related to at least bulk processing* ([0330]: "The invention monitors tasks for these conditions and creates alarms that are directed to workers to inform them of the problems." (emphasis added)),
- *removing an errored account* ([0252] "Filters can be set up to filter out records. […]" and in [0250] "Single erroneous UE records are errored out […]"); *and*
- *providing error handling related to an error generated by the errored account* ([0443]).

Claim 25:

Hanagan teaches the following limitation:

- *reprocessing the errored account in bulk before removing the account for error processing* (see the rejections of claims 3 and 17).

Claim 26:

Hanagan does not specifically teach the limitation *reprocessing the errored account before requiring manual intervention to initiate further reprocessing,* but Examiner takes Official Notice that it is old and well-known as well as common place in the workflow processing arts to initiate repeated attempts to process a specific task before requiring *manual intervention* as this increases the likelihood of enabling "customer service representatives [to] spend more time focusing on the customer and less time on manual and redundant tasks." Hanagan [0078]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the steps of reprocessing

attempt to mitigate the necessity of manual intervention because this can tend to increase system productivity (see *e.g.,* [0328]).

Claim 27:

Hanagan teaches the following limitation:

- *predicting when subscription cycle end processing needs to be performed next* (See the rejection of claim 18 above and [0307]. Also, in [0082]: "OP 22 completely automates order scheduling and processing." and in [0415]: "Batch units of workload are initiated periodically, usually according to a pre-defined time schedule or by predictable arrival of an occasional event or file of events from an external system." (emphasis added) where 'workload…' corresponds to *subscription cycle end process* as in the rejection of claim 18, 'pre-defined…' and 'predictable…' and '…event' corresponds to the limitation since scheduling an event or task is equivalent to *predicting when*...).

Claim 29:

Hanagan teaches the following limitation:

- *determining according to a predetermined threshold level when a second account that is dependent on a first account is considered inconsistent* (Regarding the first and second account (*dependent on…*) in in [0133] "These types of customers are generally large with multiple invoices, accounts, and locations." (emphasis added) hence related or dependent accounts. In [0250-3]: "The Validator [ ] validates the [ ] records for correctness and […] performs different types of edits on the fields of the internal record format (for example, numeric checks, date validations, and value checks). Moreover, the Validator determines which records need to be assembled for long duration. An event record file is rejected if it contains too many erroneous records (as specified in a parameter). […] Several error groups can be defined. […] The importance of the error group determines how to handle the record (for example, ignore the incorrectness, recycle the record, or write it to the Invalid Event Records File). The error severity can be configured. […] Corrections can be applied either to individual records, or to multiple

records grouped by error codes and error groups. [...] A warning is issued when configurable specified thresholds are passed.")

Claim 32:

Hanagan teaches the following limitation:

- *a first system that processes a set of tasks against a plurality of accounts; a second system that processes the same set of tasks against the plurality of accounts; wherein the first system signals the second system to bypass processing of one of the plurality of accounts if the first system determines an error in the one account* ([0163]: "Even when alternative processing is used, the event continues along the common path once the exception logic is completed." In [0444]: "This service allows processes to be controlled by a central control and management process (C&M). In this case, C&M can start, stop (gracefully or immediately) and monitor processes to verify their current state (running or in error)." (emphasis added) where 'processes' refers to at least two system elements or systems. In [0250]: "The Validator 176 validates the UE (Unrated Event) records for correctness and sends the UE records to the Duplicate Event Check process. [...] An event record file is rejected if it contains too many erroneous records (as specified in a parameter). Single erroneous UE records are errored out and written to an Invalid Event Records File. [...] The importance of the error group determines how to handle the record (for example, ignore the incorrectness, recycle the record, or write it to the Invalid Event Records File)" (emphasis added) where 'write it to the...' corresponds to *bypass processing*. Also, in [0475]: "Multiple processes can share memory-mapped files. If two processes on the same machine map to the same file, the file will be loaded into memory only once." (emphasis added) where 'file' corresponds to *accounts* and 'multiple processes' corresponds to *processes a set of tasks...*).

Claim 33:

Hanagan teaches the following limitation:

- *the second system signals the first system to bypass processing of another of the plurality of accounts if the second system determines an error in the another account* (In [0445]: "Using

special workload balancing processes, message queuing provides a straightforward mechanism for load balancing across multiple batch application processes serving the same function." (emphasis added) and see the rejection of claim 32 above.).

Conclusion

The prior art made of record and not relied upon that is considered pertinent to applicant's disclosure are:

- Seshadri, *et al.* (US PgPub 20040002988 A1)
- Savage, *et al.* (US 7236950 B2).

Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **Dr. Mark A. Fleischer** whose telephone number is **571.270.3925.** The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **Beth Van Doren** whose telephone number is **571.272.6737** may be contacted.

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